

WHAT IS CLAIMED:

1. A method of forming a Spin-On-Glass (SOG) layer in an integrated circuit, the method comprising:

forming an SOG layer on an integrated circuit substrate;

performing a first curing process on the SOG layer;

5 removing less than all of the SOG layer from the integrated circuit substrate through a mask pattern on the SOG layer to provide a remaining portion of the SOG layer on the integrated circuit substrate;

performing a second curing process on the remaining portion of the SOG layer; and

10 removing the remaining portion of the SOG layer to expose the integrated circuit substrate.

2. A method according to Claim 1 wherein said step of removing comprises:

15 etching the SOG layer through the mask pattern to form a recess in the SOG layer, wherein the recess has a bottom formed of the SOG layer that is spaced-apart from the integrated circuit substrate by a thickness of the bottom.

3. A method according to Claim 2 wherein etching is performed using a
20 C-F based gas, CO gas, O₂ gas and an inert gas as etching gas, reaction gas and atmospheric gas, respectively.

4. A method according to Claim 2 wherein etching is performed at an RF
25 power in a range between about 1000 Watts and about 2000 Watts at a pressure in a range between about 10 mTorr and about 100 mTorr and a temperature in a range between about 0 °C and about 60 °C for a time in a range between about 20 second and about 50 seconds.

5. A method according to Claim 2 wherein etching is performed using at
30 an RF power in a range between about 1000 Watts and about 2000 Watts at a pressure in a range between about 10 mTorr and about 100 mTorr and a temperature in a range

between about 0°C and about 60 °C for a time in a range between about 5 second and about 30 seconds.

6. A method according to Claim 2 wherein forming an SOG layer
5 comprises:
forming a stopper layer on the integrated circuit substrate on which a
predetermined pattern has been formed; and
forming the SOG layer on the stopper layer, wherein the stopper layer is etched
using the mask pattern after etching the SOG layer.
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7. A method according to Claim 6 wherein the stopper layer comprises a
silicon nitride layer (Si_3N_4), an aluminum oxide layer Al_2O_3 , an aluminum nitride
layer AlN , a titanium nitride layer TiN or a tantalum nitride layer (TaN).
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8. A method according to Claim 2 wherein said step of etching the bottom
is followed by:
cleaning the integrated circuit substrate; and
forming a conductive layer in the recess on the integrated circuit substrate.
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9. A method according to Claim 1 wherein said step of performing the
first curing process comprises performing the first curing process at a temperature in a
range between about 600 °C and about 800 °C for a time in a range between about 20
minutes and about 2 hours.
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10. A method according to Claim 1 wherein said step of performing the
second curing process comprises performing the second curing process at a
temperature in a range of between about 400 °C and about 800 °C for a time in a
range of between about 10 minutes and about 1 hour.
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11. A method according to Claim 1 wherein the first and second curing
processes are performed using H_2O , O_2 , N_2 , H_2 , NO_2 or a mixture of these gases as an
atmospheric gas.

12. A method according to Claim 1 wherein the remaining portion has a thickness that is adequate to prevent oxidation of the integrated circuit substrate during the second curing process.

5 13. A method according to Claim 12 wherein the thickness is in a range between about 300 Ångstroms and about 500 Ångstroms.

10 14. A method according to Claim 1 wherein the mask pattern is formed of a polysilicon layer, an aluminum oxide layer (Al_2O_3), an aluminum nitride layer (AlN) or a silicon nitride layer (Si_3N_4).

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